FARMER'S LUNG

A New Industrial Disease

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FARMER'S LUNG, as its name suggests, is essentially a rural disease which results from the inhalation of dust from mouldy hay by persons who have become hypersensitive to antigens in that dust. It was first described by Campbell, in 1932, in five patients who developed "acute symptoms following work with hay." Subsequently many similar conditions were reported from different parts of the United Kingdom (Fawcitt, 1936, 1938; Studdert, 1953; Williams and Mulhall, 1956), from the United States of America (Dickie and Rankin, 1958), Norway (Törnell, 1946), Switzerland (Hoffmann, 1946), Sweden (Zettergren, 1950), France (Raton, 1951) and Eire (Joyce and Kneafsey, 1955).

The main features of typical acute attacks are dyspnoea, cough and perhaps haemoptysis, malaise, chills and fever a few hours after exposure to the dust. The criteria of diagnosis adopted by Staines and Forman (1961) in a widespread survey of the disease in the United Kingdom were as follows :—

1. A history of recent or continuing exposure to vegetable dust which is believed to be fungus-contaminated.
2. Dyspnoea and/or cough.
3. Abnormal physical signs in the chest.
4. The absence of "positive and certain" findings diagnostic of other pulmonary diseases, in particular, pulmonary tuberculosis, mineral pneumoconiosis or neoplasm.
5. The absence of a clinical course characteristic of "conventional" acute bacterial infections.

With the realisation that farmer's lung was a widespread and debilitating disease, the Medical Research Council established units at Rothamsted Experimental Station, Harpenden, and at the Institute of Diseases of the Chest, Brompton, At Rothamsted, factors involved in the moulding of hay were studied in great detail and analyses of the microbial content under different conditions were carried out. At Brompton, a systematic search was made for antibodies in the sera of patients with farmer's lung which would precipitate with antigens extracted from the mouldy hay and/or particular organisms found in the hay.

At various stages in the course of these investigations several fungi were thought to be responsible for the disease. *Aspergillus* spp. for example, were thought to be implicated as they are always abundant in mouldy hay (Gregory and Lacey, 1963) and known to cause similar symptoms. *Candida albicans* was also thought to be involved (Zettergren, 1950). Further investigations, however, showed that neither of these groups was directly involved and eventually it was reported that thermophilic actinomycetes had a prominent role in causing farmer's lung. Recent data

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(Pepys and Jenkins, 1965) show that the sera of 89 per cent. of patients with farmer's lung give a positive reaction to antigens produced by the thermophilic actinomycetes, *Thermopolyspora polyspora* and/or *Micromonospora vulgaris*. However, apparently 15-21 per cent. of individuals with no obvious clinical symptoms of farmer's lung also show a positive reaction to these antigens. From these findings it has been possible to devise and apply serological diagnostic tests with a moderate degree of specificity. These involve both immunodiffusion and immunoelectrophoresis in which sera are tested against standardised antigen produced from the thermophilic actinomycetes.

Staines and Forman (1961) have concluded that farmer's lung is an industrial disease and recently the Industrial Injuries Advisory Council to the Minister of Pensions and National Insurance has recommended that it be prescribed as such under the National Insurance (Industrial Injuries) Act, 1946.

Regulations were made by the Ministry to amend the consolidated Prescribed Diseases Regulations to include the disease referred to as "Farmer's Lung" in the First Schedule of the latter regulation. The effective date of the operation of the amendment to the main regulations is Monday 21st June 1965, and the description in the Schedule is:

Description of disease or injury	*Nature of occupation*
43. Pulmonary disease due to the inhalation of the dust of mouldy hay or of other mouldy vegetable produce, and characterised by symptoms and signs attributable to a reaction in the peripheral part of the broncho-pulmonary system, and giving rise to a defect in gas exchange (Farmer's Lung).	Any occupation involving exposure to the dust of mouldy hay or other mouldy vegetable produce by reason of employment: (a) in agriculture, horticulture or forestry; or (b) loading or unloading or handling in storage such hay or other vegetable produce; or (c) handling bagasse.

In England and Wales a diagnostic service is now provided by the Public Health Laboratory Service. A similar service is available in Scotland and also in Northern Ireland in the Mycology Laboratory, Department of Microbiology, the Queen's University of Belfast. It is suggested that blood samples (5 ml. of clotted blood) should be submitted to the Mycological Diagnostic Laboratory either direct or through the clinical pathologist of the regional hospital laboratory. Between 1st March—30th June positive serological tests were obtained in 43 (50%) of 87 patients tested.

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